



Department of the Navy Announces the Proposed Plan for Cleanup of Soil at Marine Corps Base Camp Pendleton for Operable Unit 4 Site 1H

November 2006

The Department of the Navy (DON) (including both the Navy and the Marine Corps) invites you to comment on the proposed cleanup plans for contaminated soils at Camp Pendleton Site 1H. This site is classified as part of *Operable Unit 4* or *OU 4* (words in *italics* are found in the Glossary on page 8).

The proposed cleanup is part of the DON's *Installation Restoration* (IR) program. The purpose of the IR program is to locate and clean up hazardous waste from former activities at military installations.

This Proposed Plan summarizes the cleanup alternatives evaluated for Site 1H and identifies the preferred alternative.

This Plan also summarizes information that can be found in greater detail in the Operable Unit 4 *Feasibility Study* and other documents contained in the *Administrative Record* for Marine Corps Base (MCB) Camp Pendleton. The DON, the United

Public Comment Period

November 7 to December 8, 2006

You are invited to review the cleanup proposal and send written comments during the comment period. See page 7 for information on where to find the documents and how to submit comments.

Public Meeting

6:30 p.m. Tuesday, November 14, 2006

Stuart Mesa Community Center

This meeting is an opportunity for you to hear more about the cleanup proposal, to ask questions, and to give verbal and written comments in person.



Figure 1: Base Location Map and Site 1H

States Environmental Protection Agency (USEPA), and the State of California encourage the public to review these documents to better understand these sites and other IR program activities that have been conducted at MCB Camp Pendleton.

MCB Camp Pendleton (the Base) is in northern San Diego County, California. The Base is bordered on the west by the Pacific Ocean and occupies approximately 125,000 acres of land (Figure 1). Nearly 60,000 personnel train at Camp Pendleton every year, with over 35,000 service members actually assigned to the Base.

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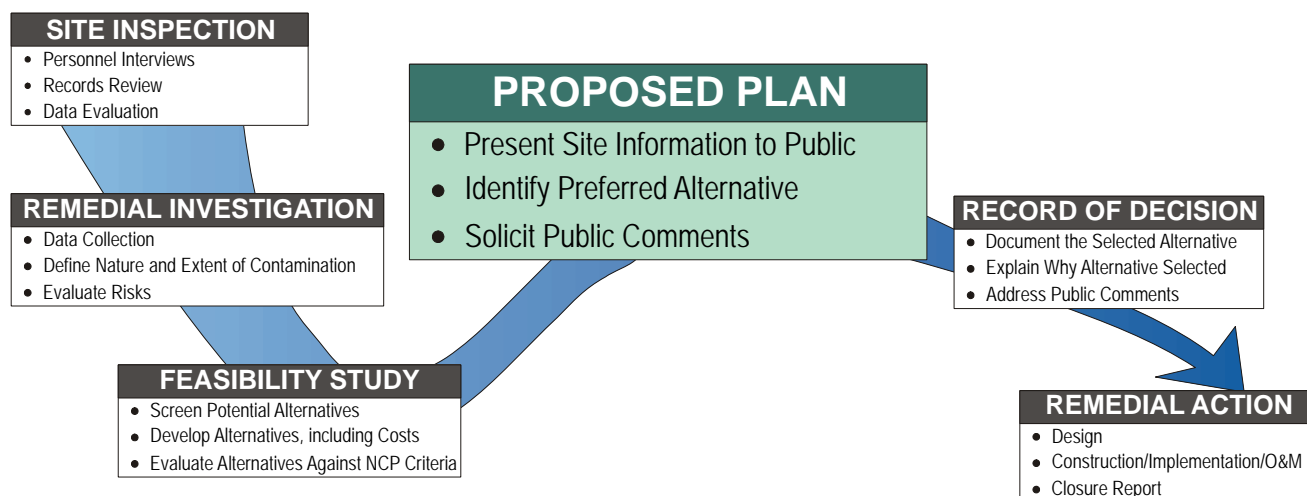


Figure 2: Steps of the CERCLA Process

THE CERCLA CLEANUP PROCESS

The environmental investigations and cleanup at the Base follow the steps shown in Figure 2. These investigations are carried out in accordance with various environmental laws and regulations, including CERCLA (*Comprehensive Environmental Response, Compensation, and Liability Act*), SARA (*Superfund Amendments and Reauthorization Act*), the NCP (*National Contingency Plan*), and Executive Order 12580 (which delegates the implementation of CERCLA to the DON). Steps 1 through 3 were completed for these sites.

During step 2, the *Remedial Investigation*, an environmental study was conducted to identify the type and extent of contamination at the site, and to determine the risk the site poses to human health and the environment. During step 3, the *Feasibility Study*, the results of the risk assessment were looked at and alternative methods for site cleanup were analyzed. The reports completed during the previous steps are available for review in the Administrative Record, at the Base, and at the Oceanside Public Library (see page 7).

This Proposed Plan is step 4 and is based on previous field investigation and reports that were done in the first three steps noted above. The Proposed Plan presents site information to the public, identifies the preferred alternative, and solicits public comments.

After step 4, the DON will review your comments and make a decision regarding the cleanup alternatives. The DON will summarize and respond to public comments in a Responsiveness Summary. They will then write the *Record of Decision* (ROD), which is step 5. Any cleanup action is in step 6. Once the sites are clean, a final report is written that describes what was done and the process is over or “closed”.

“RISK ASSESSMENTS” STUDY THE POSSIBLE RISK TO HUMAN HEALTH AND WILDLIFE

The studies completed as part of step 3 at Site 1H included detailed risk assessments to find out if the chemicals could potentially pose a risk to human health or wildlife. A description of the human and ecological risk assessment processes are presented in the following paragraphs.

The *human health risk* assessment examines three levels of negative or adverse health risk: cancer risk, noncancer hazard, and blood-lead level.

First, cancer risk is expressed in terms of the probability that an individual or a particular group of individuals would have an increased chance of contracting cancer over a lifetime period of 70 years. For example, a risk of 1 in a million means that an exposed person could have an increased likelihood of 1 in a million to develop cancer. If the increased cancer risk posed by a site is greater than 1 in a million, but less than 1 in 10,000, then the site falls within the range that the USEPA refers to as a risk management range, where various factors are taken into consideration to determine if remedial action is necessary. If the site risk is greater than 1 in 10,000, then remedial action is generally warranted at a contaminated site.

Second, noncancer health effects are evaluated in terms of a hazard index (HI) that determines negative health effects caused by specific chemicals. If the HI is above 1, then there is a possibility that there might be negative health concerns caused by the site.

Blood-lead levels are the third measure of adverse health effects. Because of unique characteristics of lead, it is not evaluated in the cancer or noncancer methods. A blood-lead level predicted to be greater than 10 micrograms of lead per deciliter of blood indicates unacceptable exposure.

INTRODUCTION

Also, the *ecological risk* is evaluated to determine the potential for negative effects on plants and animals from exposure to site contaminants. Plants and animals are identified that represent the types found at each specific site. Coordination between the Base and regulatory agency staff ensures that any action agrees with the Base's mission and with agency requirements. For example, special-status species ("endangered species") occur near Site 1H, and coordination with the US Fish and Wildlife Service would be appropriate to ensure protection of those species during remedial action.

For each plant or animal at a site, ecological hazard estimates, or hazard quotients, were computed. If the hazard quotient is greater than 1, then this indicates that the concentrations may pose an unacceptable risk to a particular plant or animal, and the site may need further evaluation.

Human health and ecological risk were calculated to determine the need for action at Site 1H. Test results were evaluated to estimate the potential negative effects on human health or plants and animals (ecological receptors) from exposure to chemicals on the sites. The results of the risk assessments are summarized in the description of Site 1H on the next page.

REMEDIAL ACTION OBJECTIVES

In the Feasibility Study (step 3), potential cleanup alternatives were developed and evaluated. The first step in that process involved developing *Remedial Action Objectives* (RAOs). Site-specific RAOs were established to

identify and screen alternatives that protect human health and the environment. Remedial action objectives for the site are discussed on page 4.

Remediation Goals (RGs) were developed to meet the objectives for each site. The RGs are the highest concentrations of chemicals that can be left in soil or groundwater and still be protective of human health and the environment. The RGs were established for the chemicals that pose a significant risk to human health or ecological receptors.

CHOOSING A PREFERRED ALTERNATIVE

Following the risk evaluation and establishing cleanup goals for the site, the lead agency develops and analyzes a number of alternative methods to achieve site cleanup, and then chooses a preferred alternative that is considered the best all-around cleanup choice. The cleanup choice is made based on standards that are spelled out in the NCP. The NCP requires that each alternative be evaluated against each of nine criteria, which are divided into two threshold criteria, five balancing criteria, and two modifying criteria, as shown in Figure 3. The alternative that is selected as the preferred one must meet the two threshold criteria. The five balancing criteria judge how possible and cost-effective the permanent solutions and treatment can be. State and community acceptance are factored into a final determination of the preferred alternative. Community concerns will be addressed following the 30-day public comment period on the Proposed Plan.

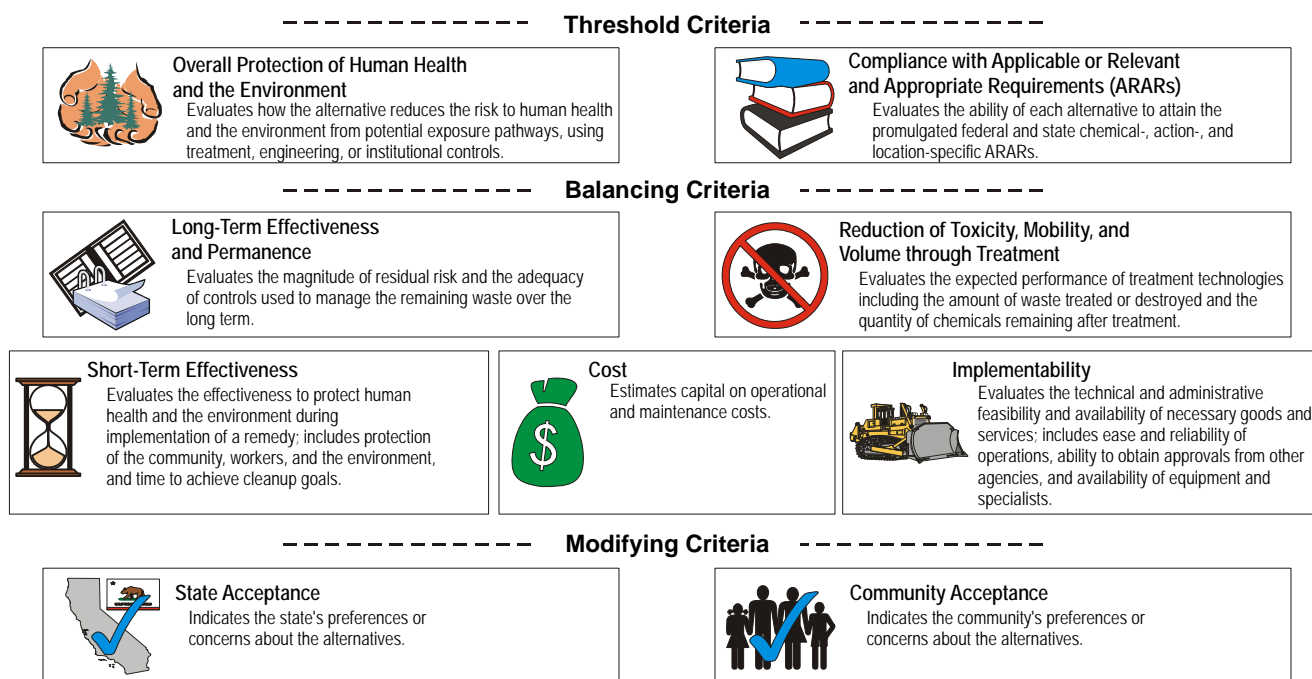


Figure 3: NCP Criteria

SITE 1H – REFUSE BURNING GROUND (62 AREA)

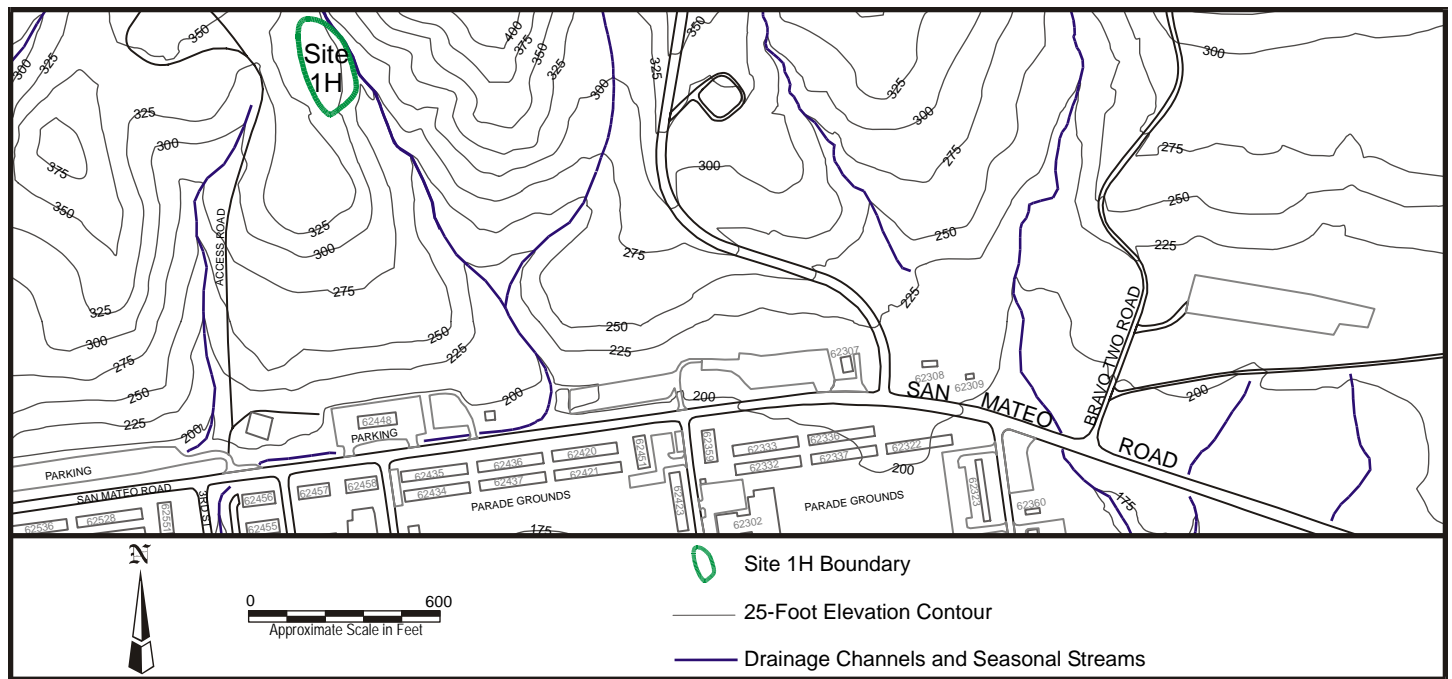


Figure 4: Location of Site 1H

SITE 1H - REFUSE BURNING GROUND

Site 1H is a former refuse burning area in the hills near the western perimeter of the Base in 62 Area, approximately 1,200 feet north of San Mateo Road (Figure 4). The site is densely vegetated and currently covered by 3 feet or more of soil over buried waste and ash. From 1998 to 2001, the DON conducted a series of studies at the site, including taking soil samples.

Chemicals of concern found in soils include some metals (antimony, arsenic, chromium, copper, iron, lead, and manganese), and chemicals called *dioxins/furans* that are created when materials are burned. The estimated volume of contaminated soils is about 10,800 cubic yards, which cover approximately 140 feet by 300 feet (Figure 5). The waste material, which is mixed with native soil, is present approximately 5 to 15 feet below ground surface and ranges from approximately 2 to 10 feet thick.

The risk assessment found that chemicals in soil represent a potential risk to human health based on possible future land use. The estimated cancer risk to human health is greater than 1 in a million, but less than 1 in 10,000 (specifically 5 in 100,000). Therefore, the potential additional cancer risk posed by the site falls within the USEPA's risk management range, where various other factors need to be taken into account in determining if remedial action is warranted. However, the noncancer health hazard index for the site is approximately 2, which is greater than the USEPA's target hazard index of 1. Also, the highest lead levels at

the site are above the range that is considered safe using the Cal/EPA's blood-lead model. In addition, military training involving contact with soils deeper than 3 feet may result in adverse health effects due to the possible presence of remnants of lead-acid batteries, caustics, or other materials that could pose an acute hazard.

The results of the ecological risk assessment indicate that Site 1H does not represent a significant threat to ecological receptors in its current condition; however, this conclusion is based on the relatively clean cover soils remaining in place (in other words, not washing away over time). If the upper few feet of cover soil washed away, then there would likely be a significant risk to surface waters, which could impact ecological receptors.

Groundwater is approximately 200 to 225 feet below ground surface. Based on the nature of the waste and the depth to groundwater, it was determined that the threat to groundwater from chemicals in soil is negligible. Also, the site is not in an area where groundwater is used as drinking water.

REMEDIAL ACTION OBJECTIVES

After evaluating site conditions, risks, and legal requirements, one Remedial Action Objective (RAO) was identified to protect people and the environment:

- Minimize exposure of people, plants and animals to chemicals in soil that pose a significant risk.

To meet the RAO, the remedial goal (RG) for lead in soil is 150 milligrams per kilogram and the RG for dioxins/furans in soil is 3.9 *picograms* per gram.

CLEANUP OPTIONS

Alternatives were considered to lessen or eliminate the risks posed by Site 1H (Figure 5). The DON looked at four possible cleanup options as well as no action.

- Alternative 1H-1 No Action
- Alternative 1H-2 *Land Use Controls*
- Alternative 1H-3 Capping (Engineered Soil Cover), Cap Monitoring/Maintenance, and Land Use Controls
- Alternative 1H-4 Soil Excavation, Backfill, and Off-Base Disposal
- Alternative 1H-5 Soil Excavation, Backfill, and On-Base Disposal

EVALUATION OF ALTERNATIVES

Based on the potential cancer risks to people and hazards to animal species, the DON evaluated each alternative against the nine evaluation criteria (Figure 3). Alternatives 1H-1 through 1H-5 were compared to the NCP criteria. The advantages and disadvantages of the alternatives compared to each criteria are presented below; the results are summarized in Table 1.

The estimated cost for each alternative in this Proposed Plan has been refined since the publication of the FS. These refined cost estimates reflect the DON's best estimate to implement each alternative for Site 1H.

Alternative 1H-1: No Action is required to be evaluated under CERCLA and is included only as a point of comparison. Under this option, nothing is done to clean up the soil contamination, prevent land use, or limit contaminant movement. This alternative does not meet ARARs, protect the environment, or provide long-term effectiveness and permanence. There are no costs for this alternative.

Alternative 1H-2: Land Use Controls are measures designed to prevent or limit exposure to hazardous substances left in place at a site, or to assure the effectiveness of a chosen remedy. Land Use Controls can be physical barriers such as fences or signs or legally binding requirements to prevent ground disturbance at a site. The alternative includes restrictions on future development and land use, as well as site inspection and monitoring to prevent unauthorized use as long as wastes remain at the site. Alternative 1H-2 would protect human health and the environment through land use restrictions. However, land use controls are not considered practical due to the Base's mission of military training. In addition, the relatively clean cover soil is subject to long-term erosion and is unlikely to remain undisturbed. The cost is approximately \$685,000.

Alternative 1H-3: Capping (Engineered Soil Cover) involves installing a specially constructed soil cover that would limit exposure to the contamination underneath. To

| Criteria | Alternative | | | | |
|---|-------------|------|------|------|------|
| | 1H-1 | 1H-2 | 1H-3 | 1H-4 | 1H-5 |
| Threshold Criteria | | | | | |
| Overall Protection of Human Health and the Environment | No | Yes | Yes | Yes | Yes |
| Compliance with ARARs | No | Yes | Yes | Yes | Yes |
| Primary Balancing Criteria | | | | | |
| Long-Term Effectiveness and Permanence | ○ | ◐ | ◑ | ● | ● |
| Reduction of Toxicity, Mobility, or Volume by Treatment | ○ | ○ | ○ | ○ | ○ |
| Short-Term Effectiveness | NR | ● | ◐ | ◐ | ◐ |
| Implementability | NR | ◐ | ◐ | ● | ◐ |
| Cost (\$ million) | 0 | 0.7 | 1.9 | 2.9 | 2.5 |

○ Low ◐ Moderate ● High NR = Not Rated

Table 1: Summary of Criteria Evaluation for Site 1H

ensure that human health is protected, the cap must not be breached through trenching or excavation and must be designed to not be damaged by flooding. This alternative would protect human health and the environment, and meet ARARs. Long-term effectiveness is rated as moderate to high because the elimination of exposure pathways depends on the soil cover remaining in place. No reduction of toxicity, mobility, or volume through treatment would be achieved. Short-term effectiveness is rated moderate due to short-term risks to site workers and ecological receptors and habitats from construction activities. Short-term risks to site workers would be mitigated by protection procedures specified in the health and safety plan and impacts to ecological receptors and habitat would be lessened by close coordination with the appropriate regulatory agencies

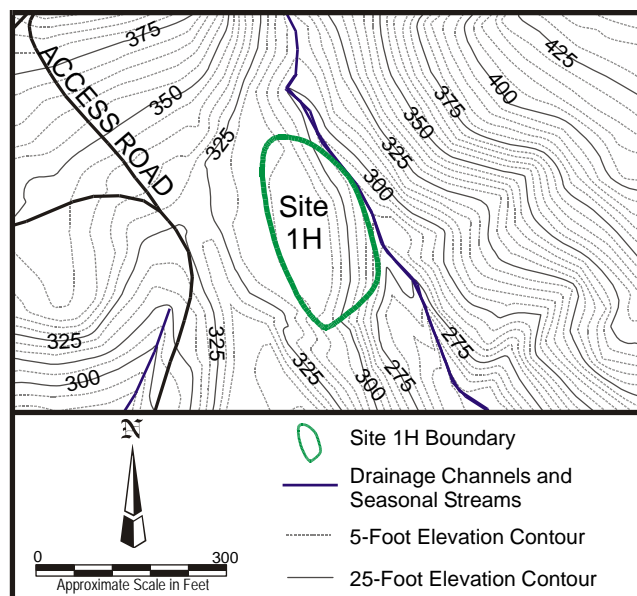


Figure 5: Site 1H

(i.e., US Fish and Wildlife Service [USFWS]). Implementability is rated as moderate, because the cap would have some of the same drawbacks as land use controls, including long-term maintenance and a requirement not to disturb the soil. Alternative 1H-3 would cost approximately \$1,872,000.

Alternative 1H-4: Soil Excavation and Off-Base Disposal includes excavating contaminated soil and transporting it to an off-Base disposal facility. No pretreatment will be performed prior to disposal because none of the excavated soil would qualify as RCRA-hazardous waste and would not be subject to land disposal restrictions. The estimated volume of soil to be removed and transported is 10,800 cubic yards. Sampling and analysis of excavated areas to make sure they are clean, bringing in clean backfill, and restoring site vegetation are the final stages. Alternative 1H-4 would protect human health and the environment, and meet ARARs. Long-term effectiveness and permanence is rated high because all contaminated material would be removed from the site. Short-term effectiveness is rated moderate due to short-term risks to site workers and ecological receptors and habitats from excavation activities. Short-term risks to site workers would be mitigated by protection procedures specified in the health and safety plan and impacts to ecological receptors and habitat would be lessened by close coordination with the appropriate regulatory agencies (i.e., USFWS). Alternative 1H-4 would be the most readily implementable because excavation and disposal is routinely performed at many sites, and there are no complex design or long-term maintenance considerations to carry out this alternative. The overall costs are estimated to be \$2,909,000.

Alternative 1H-5: Soil Excavation and On-Base Disposal is nearly the same as Alternative 1H-4, except that contaminated soils would be disposed of at a new on-Base disposal facility instead of being shipped off the Base. Alternative 1H-5 would protect human health and the environment, meet ARARs, and provide a high degree of long-term effectiveness and permanence. Alternative 1H-5 is not readily implementable because there is no appropriate on-Base disposal facility. A new on-Base disposal facility would require several years to site, design, and construct; more regulatory involvement; long-term O&M; and loss of land use. The overall costs are estimated to be \$2,466,000.

RECOMMENDED CLEANUP ALTERNATIVE

The DON recommends Alternative 1H-4 (Soil Excavation and Off-Base Disposal) because it protects both human health and the environment, is cost effective, and can be easily implemented. An evaluation of the NCP criteria is presented below.

Threshold Criteria

Alternative 1H-4 meets the two threshold criteria. This alternative would protect human health and ecological receptors and complies with ARARs. All contaminated soil exceeding chemical-specific RGs would be removed and transported off Base for disposal. The site would then be backfilled with clean imported soil, and the vegetation would be restored. By excavating the contaminated soils to meet training requirements, it is expected that the site will meet the requirements for unrestricted land use. ARARs would be met by excavating soils exceeding chemical-specific RGs and by coordinating with the USFWS, State Historic Preservation Officer, and appropriate Native American groups.

Balancing Criteria

Alternative 1H-4 provides the best balance of tradeoffs with respect to the balancing criteria. This alternative would be effective over the long term and be permanent because contaminants are removed from the site and the contaminated soil is replaced with clean import soil. No reduction of toxicity, mobility, or volume through treatment is associated with any of the alternatives; all alternatives are ranked low for this criterion. Potential short-term risks to site workers would be mitigated by protection procedures specified in the health and safety plan. Some short-term impacts to ecological receptors and habitat could occur, but would be lessened by close coordination with the appropriate regulatory agencies (i.e., USFWS). Excavation and disposal of contaminated soil at an off-Base disposal facility are readily implemented following standard construction practices. Since most of the impacted soil would be permanently removed from the site, no further actions are expected to be necessary. The cost for Alternative 1H-4 is estimated at \$2,909,000.

Modifying Criteria

The USEPA and the State of California concur with the preferred alternative. The public is encouraged to participate and provide comments. Details on the public comment period and the public meeting are provided on page 7.

CONCLUSION

In summary, the DON recommends Alternative 1H-4 because it would be protective of human health and the environment, would comply with ARARs, would be cost-effective, would use permanent solutions, and would be implementable, as required by CERCLA and the NCP. Alternative 1H-4 meets the threshold criteria and represents the best balance of tradeoffs with regard to the balancing criteria.

Public input is important in the decision-making process. Nearby residents and interested parties are encouraged to use the comment period to ask questions about the preferred remedial alternative for Site 1H. The DON will summarize and respond to public comments in a Responsiveness Summary, which will become part of the official Record of Decision.

WHERE YOU CAN FIND THE CLEANUP PLAN AND OTHER DOCUMENTS

Documents relating to the IR program and this Proposed Plan can be found for public review and comment at the following locations:

Administrative Record Naval Facilities Engineering Command Southwest

1220 Pacific Highway
San Diego, CA 92132-5190
please call (619) 532-3676

MCB Camp Pendleton Environmental Security Office

Building 22165
MCB Camp Pendleton, CA 92055-5008
please call (760) 725-9744

Oceanside Public Library

330 N Coast Hwy, Oceanside, CA 92054
Monday through Wednesday 10 am to 8 pm
and Thursday through Saturday 10 am to 5 pm
(760) 435-5600

A copy of the Administrative Record, which contains all of the materials the Base relies on in selecting a cleanup alternative, is also available.

RECORD OF DECISION

Following the public comment period, the USEPA, the State of California, and the DON will sign a Record of Decision. It will detail the approach chosen for the site and include the DON's responses to comments received during the public comment period.

WHO TO CONTACT FOR MORE INFORMATION

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If you have comments on this Proposed Plan or questions about the IR program, contents, or issues discussed in the Proposed Plan, please contact any of the above individuals.

COMMENT PERIOD AND PUBLIC MEETING

The public comment period for this Proposed Plan offers you an opportunity to provide input to the process for controlling contamination and risks at Camp Pendleton. The public comment period will begin on November 7, 2006 and end on December 8, 2006, and a public meeting will be held on November 14, 2006 at 7:00 p.m. in the Stuart Mesa Community Center (Building 310001). All interested parties are encouraged to attend the meeting to learn more about the alternatives developed for the site. The meeting will provide an additional opportunity for the public to submit comments on this Proposed Plan to the DON.

Administrative Record – All documents that have a legal bearing and were used to make decisions on cleanup actions.

ARAR (Applicable or Relevant and Appropriate Requirement) – This is a federal or state law that must be considered in choosing a remedial action. Remedial actions must be designed, constructed, and operated to comply with all ARARs.

CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act) – This federal law outlines a series of steps to address the cleanup of hazardous waste disposal and spill sites. CERCLA requires the cleanup, or remediation, of hazardous waste sites created by historical disposal practices. Congress gave the USEPA responsibility for overseeing compliance with this law.

Dioxins/Furans – A class of chlorinated chemicals that are formed in the combustion process.

Ecological Risk – A qualitative or quantitative estimate of the potential impact on local plants and animals exposed to chemicals detected in the environment.

FS (Feasibility Study) – A cost and engineering study that looks at all of the possible cleanup options that are available and evaluates their ability to clean up contamination at a site.

Human Health Risk – A qualitative or quantitative estimate of the potential impact on the human population exposed to chemicals detected in the environment.

IR (Installation Restoration) – The IR program provides guidance and funding for the investigation and remediation of hazardous waste sites caused by disposal activities at military installations.

Land Use Controls – These are measures designed to prevent or limit exposure to hazardous substances left in place at a site, or to assure the effectiveness of a chosen remedy. Land Use Controls can be physical barriers such as fences or signs or legally binding requirements to prevent ground disturbance at a site.

NCP (National Contingency Plan) – The NCP establishes the regulatory requirements for CERCLA decision documents, such as this Proposed Plan.

OU (Operable Unit) – A group of one or more cleanup sites. Often the sites within the operable unit have similar characteristics, such as contaminants, industrial processes, or location.

Picogram – one trillionth of a gram.

RAO (Remedial Action Objective) – Describes what the site cleanup is expected to accomplish.

RG (Remediation Goal) – The acceptable level of a chemical to protect human health and ecological receptors, which is calculated during the human and ecological risk assessments and based on the conditions at a specific site.

RI (Remedial Investigation) – An environmental study that identifies the nature and extent of contamination at a site.

ROD (Record of Decision) – A public document that explains which cleanup alternatives will be used at NPL sites. The ROD is based on information and technical analysis generated during the remedial investigation/feasibility study and consideration of public comments and community concerns.

SARA (Superfund Amendments and Reauthorization Act) – The Superfund Amendments and Reauthorization Act of 1986 reauthorized CERCLA to continue cleanup activities around the country. Several site-specific amendments, definitions clarifications, and technical requirements were added to the legislation, including additional enforcement authorities. Title III of SARA also authorized the Emergency Planning and Community Right-to-Know Act.